ABSTRACT

Purpose:

The present in-vitro study was conducted to comparatively evaluate, the effect of brushing on the surface roughness and colour stability of Poly(methyl methacrylate) Heat cure denture base resin after application of surface sealant.

Materials and Methods:

A total of 20 Poly (methyl methacrylate) Heat cure denture base resin samples of diameter 10mm and thickness of 2 mm, were fabricated. The samples were divided into two groups, as uncoated (Group I, n=10) and coated (Group II, n=10) with Denture surface sealant.

The surface roughness and colour stability of each sample in both the groups were evaluated with a 2D Surface Profilometer and Spectrophotometer respectively. The test samples of both the groups were subjected to brushing using an electronic tooth brush to simulate the brushing effect of one year duration. The test samples of both the groups, after brushing were evaluated with a 2D Surface profilometer and Spectrophotometer. The measurements obtained were tabulated and statistically analyzed.

Results:

The mean R_a value for Group I and Group II before brushing was 13.54 and 7.45 respectively. The mean L*, a*, b* values of Group I before brushing was 46.191, 14.759 and -6.621 respectively. The mean L*, a*, b* values of Group II before brushing was 46.89, 13.159 and -5.478.

The mean R_a value for Group I and Group II after brushing was 55.669 and 8.847 respectively. The mean L*, a*, b* values of Group I after brushing was 46.208, 13.829 and -6.978 respectively. The mean L*, a*, b* values of Group II after brushing was 47.099, 12.688 and -6.148 respectively. The ΔE for Group I and Group II was 1.1820 and 1.1700 respectively.

Conclusion:

The uncoated PMMA samples had exhibited significantly higher surface roughness after brushing compared to that of coated PMMA samples. The brushing has no significant effect on colour stability of both the groups. The coated samples showed lesser colour change compared to uncoated after brushing without any statistical significance. The insignificant change in surface roughness and colour stability of the coated samples after brushing can be attributed to the coating of Palaseal denture surface sealant.

Key words: Surface sealant, surface roughness, colour stability, PMMA, Profilometer, Spectrophotometer.